

【CLAIMS】**【Claim 1】**

An isolated gene regulating fruit and seed development selected from a group consisting of a gene having a nucleotide sequence set forth in SEQ. ID. No 1 containing a nucleotide sequence encoding MADS-domain, a gene having a nucleotide sequence set forth in SEQ. ID. No 2 containing a nucleotide sequence encoding MADS-domain and a gene encoding an amino acid sequence having at least 10 85% homology within the region other than MADS-domain.

【Claim 2】

An expression vector comprising the gene according to Claim 1.

【Claim 3】

15 The expression vector according to Claim 2 wherein the expression vector is *pMdMADS14* into which a gene having the nucleotide sequence set forth in SEQ. ID. No 1 is inserted in forward direction (Accession No: KCTC 10588BP).

【Claim 4】

20 The expression vector according to Claim 2 wherein the expression vector is *pMdMADS16* into which a gene having the nucleotide sequence set forth in SEQ. ID. No 2 is inserted in forward direction (Accession No: KCTC 25 10589BP).

【Claim 5】

A transgenic plant cell containing the gene according to Claim 1.

【Claim 6】

5 A transgenic plant whose fruit and seed development is regulated, and that is prepared by regeneration of the transgenic plant cells according to Claim 5 by tissue culture technique.

【Claim 7】

10 The transgenic plant according to Claim 6 wherein the plant is selected from a group consisting of food crops such as rice, wheat, barley, corns, soybean, potato, red bean, oat, sorghum; vegetables such as Chinese cabbage, radish, red pepper, strawberry, tomato, watermelon, 15 cucumber, cabbage, melon, pumpkin, spring onion, onion, carrot; industrial crops such as ginseng, *Acanthopanax senticosus*, tobacco, cotton, sesame, sugar cane, sugar beet; *Perilla japonica*, peanut, rape; fruits such as apple, pear, orange, jujube, peach, kiwifruit, grapes, tangerine, 20 persimmon, plum, apricot, bananas; floricultural crops such as rose, gladiolus, gerbera, carnation, chrysanthemum, lily, tulip; forage crops such as ryegrass, red clover, orchard grass, alfalfa, tall fescue, perennial ryegrass; fiber crops such as cotton plant; and landscape plants 25 such as flowers and shrubs.

【Claim 8】

An offspring or a clone of a transgenic plant according to Claim 6.

5 **【Claim 9】**

A Fruit, seed, ear, tuber, tuberous root, column, callus or a protoplast of a transgenic plant according to Claim 6.

【Claim 10】

10 The transgenic plant according to Claim 6 wherein the plant shows one of the following phenotypes:

15 a phenotype in which sepal is transformed into fruit flesh and parthenocarpic fruit is formed; a phenotype in which seed development is promoted and ripening is delayed; and a phenotype in which fruit and seed development is inhibited.

【Claim 11】

20 A method of preparing a transgenic plant whose fruit and seed development was regulated, comprising the steps of:

- 1) Constructting an expression vector comprising the gene according to Claim 1;
- 2) Transferring the vector constructed in Step 1) into Agrobacterium;

- 3) Co-culturing the transformed Agrobacterium of step 2) with plant tissue; and
- 4) Regenerating the transformed tissue into a mature transgenic plant.

5 **【Claim 12】**

A Composition for fruit and seed development in a plant comprising the gene according to Claim 1 or the expression vector according to any one of Claims 2-4 as an effective ingredient.

10 **【Claim 13】**

A Composition for regulating the synthesis of active gibberellin containing the gene according to Claim 1 or the expression vector according to any one of Claims 2-4 as an effective ingredient.

15